

Attachment A

Flow Frequency memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination / 303(d) Status
Iluka Resources, Inc. – Brink Concentrator Plant (VA0092436)

TO: Laura Galli

FROM: Jennifer Palmore, P.G.

DATE: October 7, 2014

COPIES: File

The Iluka Resources, Inc. – Brink Concentrator Plant discharges to an unnamed tributary of Fountains Creek (a.k.a. Fontaine Creek) near Brink, VA. Stream flow frequencies are required for use by the permit writer in developing effluent limitations for the VPDES permit. The outfalls are located at the following rivermiles:

001 5AXHZ001.37
002 5AXHZ001.58
101 5AXHZ001.37

The receiving stream is shown as ephemeral and intermittent on the USGS Barley and Ante 7 ½' Quadrangle topographic maps. The flow frequencies for dry ditches and intermittent streams are shown below.

Unnamed tributary at discharge points:

1Q30 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
30Q10 = 0.0 cfs	HM = 0.0 cfs
30Q5 = 0.0 cfs	

Tributary XHZ was not assessed for any Designated Use during the 2012 305(b)/303(d) Integrated Water Quality Assessment Report; therefore, the waterbody is considered Category 3A.

The stream should be considered a Tier 1 water due to its intermittent nature. Effluent data should be used to characterize the stream during low-flow conditions.

The watershed was included in the Fontaine Creek Bacterial TMDL, which was approved by the EPA on 1/13/2011 and by the SWCB on 8/4/2011. The facility was addressed in the report; an E. coli wasteload allocation was not assigned because the facility is not permitted for fecal coliform control.

If you have any questions concerning this analysis, please let me know.

Attachment B
Site Map and Flow Diagrams

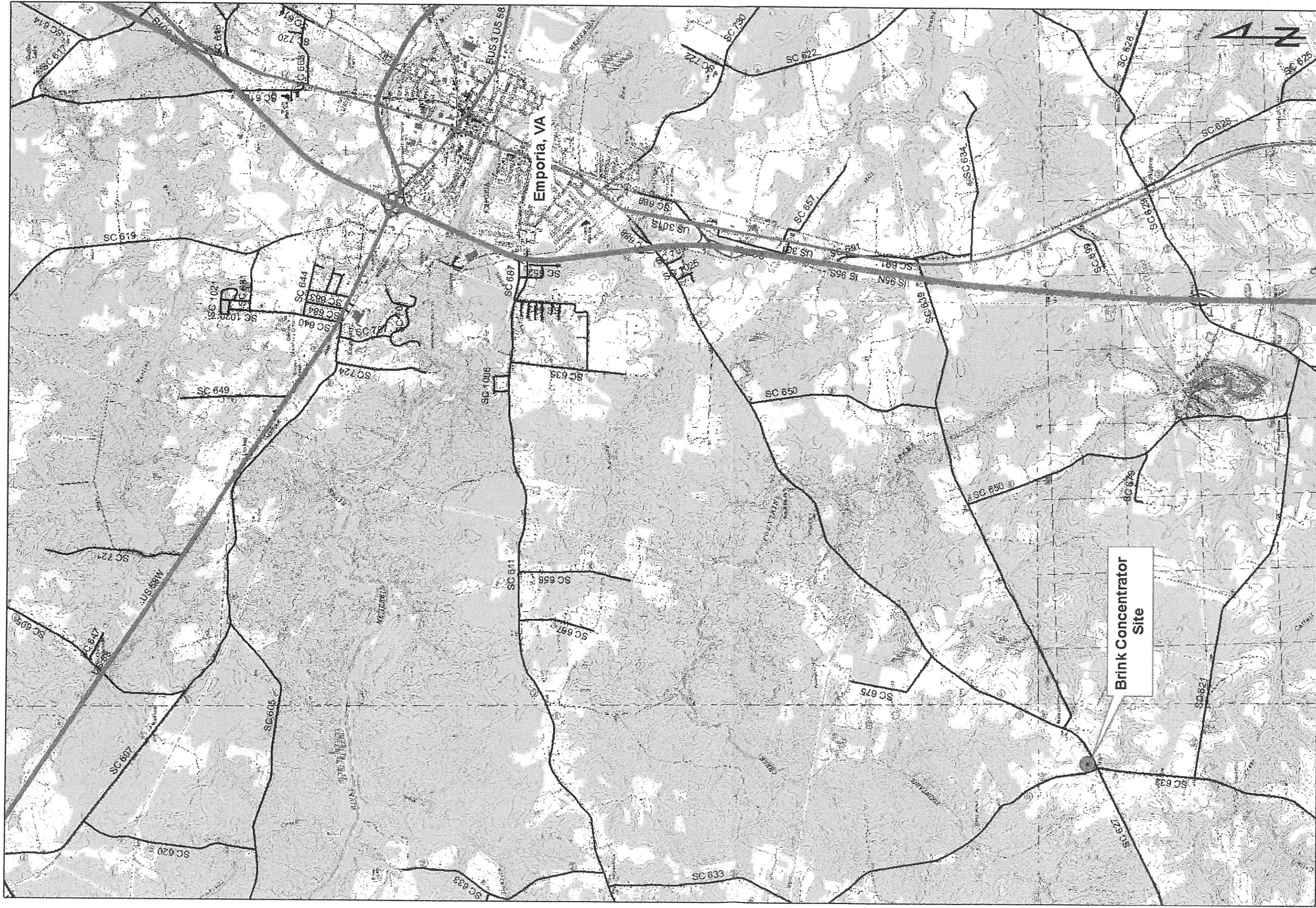


Figure 1.
 Iluka Resources
 Brink Concentrator Site
 Location Map



ILUKA



-  Concentrator Site
-  Outfall Location
-  Springs/Surface Water Bodies
-  Drinking Water Wells
-  Topography

ILUKA RESOURCES INC.
 12472 St. John Church Road
 Phone (434) 348-4300 FAX (434) 246-3039
 Stony Creek, Virginia 23882-3239



VIRGINIA OPERATIONS
**Brink
 Concentrator Site**

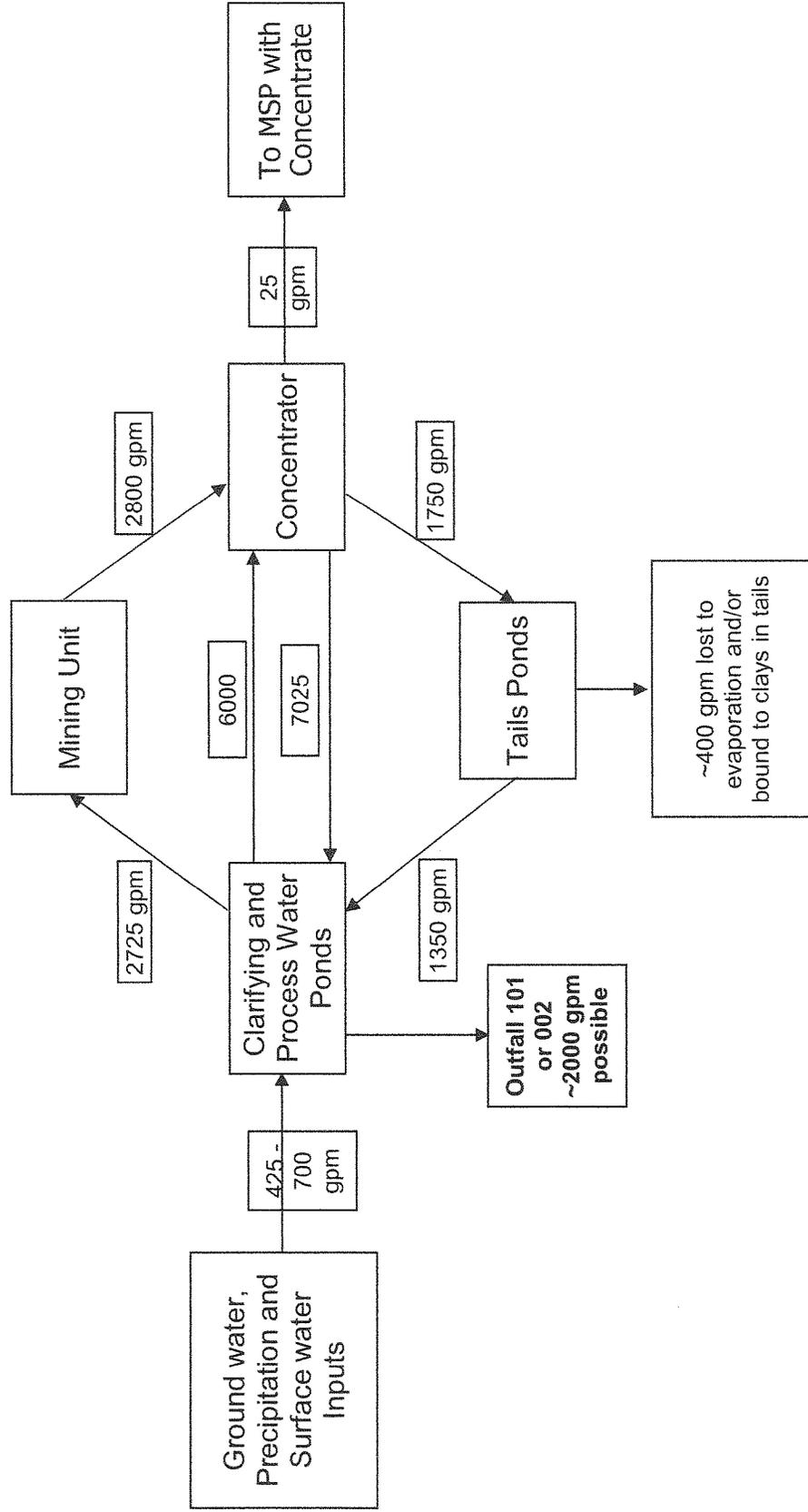
SCALE 1" = 400'

DRAWING PART

DATE
 FILE NAME

DRAFTED	C. Millbr	07-29-14	REVISED
REVISED			REVISED
REVISED			REVISED
REVISED			APPROVED

**Typical Process Water Flow Schematic
 Iluka Resources Brink Concentrator Plant
 Greensville County, Virginia**



Attachment C

Site Inspection and Site Visit Report



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE

4949-A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

www.deq.virginia.gov

Doug Domenech
Secretary of Natural Resources

David K. Paylor
Director

Michael P. Murphy
Regional Director

November 3, 2011

Mr. Jack Rayburn, E, H & S Supervisor
Iluka Resources, Inc.
12472 St. John Church Road
Stoney Creek, VA 23882

Re: General Stormwater Permit Inspection; Permit No. VAR051881 and Wastewater Facility Inspection; Permit No. VA0092436 – Iluka Resources, Inc. – Brink Concentrator Plant

Dear Mr. Rayburn,

Please review the enclosed reports and submit in writing adequate documentation of all measures taken (including all necessary supporting documentation) to address the **Request for Corrective Action, on page 2 of the General Stormwater Permit Inspection report**, no later than December 5, 2011. (There are no Requests for Corrective Action with regard to the Wastewater Facility Inspection report.)

If you have questions regarding the report, please contact me at (804) 527-5055.

Sincerely,

A handwritten signature in cursive script that reads "Mike Dare".

Mike Dare
Environmental Inspector

This letter is not intended as a case decision under the Virginia Administrative Process Act, Va. Code § 2.2-4000 *et seq.* (APA).

CC: DEQ – File
Kevin Rideout (via email)

**VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
VIRGINIA POLLUTION DISCHARGE ELIMINATION SYSTEM
GENERAL STORMWATER PERMIT INSPECTION REPORT**

Revised January 2010

FACILITY NAME:	Iluka Resources, Inc. - Brink	PERMIT NO.:	VAR051881		
FACILITY ADDRESS:	5945 Brink Road, Emporia, VA 23847				
FACILITY REPRESENTATIVE:	Kevin Rideout, Rob Allen	CONTACT INFORMATION:	(434) 348-4316		
INDUSTRIAL SECTOR:	G	SIC CODE:	1099		
INSPECTORS:	Mike Dare <i>MDare 11-1-11</i>	INSPECTION DATE and TIME on site:	10/21/11 0930-1217	UNANNOUNCED? (Y or N)	N
REVIEWER:	<i>Mew 11/1/11 Kw 11/4/11</i>			PHOTOS? (Y or N)	Y

I. RECORDS

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)	(Y or N)	NOTES
When was the SWPPP last updated?	June 2010	SWPPP includes stormwater outfall 001 (VA0092436)
Pollution prevention team identified and up-to-date?	Y	
Site location and drainage map?	Y	Except flow patterns/outfall locations not indicated
Potential pollutant sources including material inventory (includes Section 313 water priority chemicals)?	Y	
Information regarding Spills & Leaks?	Y	
Sampling Data for the previous permit term?	N/A	First permit cycle for this facility
Non-Storm Water Discharges?	N	Outfall evaluation for unauthorized discharges required annually
Best Management Practices (BMP)?	Y	
Good Housekeeping measures?	Y	
Preventive Maintenance?	Y	
Spill Prevention and Response?	Y	
Sediment erosion control and runoff?	Y	
New and continued employee training?	Y	
Is there a signed certification statement?	Y	
MONITORING	(Y or N)	NOTES
Stormwater quarterly visual examinations present and complete?	Y	
Stormwater annual Comprehensive Site Compliance Evaluation present and complete, and have the required Certification Statement?	Y	While problems found at the time of the evaluation are documented, Mr. Rideout will incorporate a checklist of items inspected.
Are stormwater samples analyzed annually?	Y	
• Do stormwater event records include all required information?	Y	
• List stormwater sampling parameters.		TSS, turbidity, pH, hardness, total recoverable, antimony, arsenic, beryllium, cadmium, copper, iron, lead, mercury, nickel, selenium, silver, zinc
• Are stormwater samples collected properly (e.g. storm event, preservation)?	N	<72 hours between sampling events
• Are stormwater DMRs completed and handled according to permit requirements?	Y	

MONITORING	(Y or N)	NOTES
• Are the stormwater sampling results in compliance with the benchmark monitoring cutoff concentrations or limits (if applicable)?	N	TSS and turbidity benchmarks exceeded for 2010 monitoring period at outfall 003. Subsequent BMP modifications appear inadequate.
• If sampling benchmark monitoring cutoff concentrations were exceeded were corrective actions (including review/revision of SWPPP) taken and documented?	Y	
Is TMDL monitoring conducted in accordance with the permit?	N/A	
Chain of Custody: sample date and time, location, collector, required tests?	Y	
Certificate of Analysis: analysis date and time, test methods, analysts name, results	Y	
Name of Contract Lab?	Rotated between: Analytics, Primary Air/Water & Soil	
Are records maintained for at least three years?	Y	Permit new with current cycle

II. FIELD OBSERVATIONS

SITE CONDITIONS	(Y or N)	NOTES
Describe the industrial activity at this facility.		Mining/primary mineral separation
Are BMPs maintained in effective operating condition?	Y	Except for approach to stormwater pond for outfall 003
Is there vehicle maintenance on-site?	Y	
• Are the associated fluids (oils, fuels, etc) disposed of properly (i.e. not leaking onto the ground or into surface waters)?	Y	
Are chemicals and other materials handled, disposed of, or stored so as to prevent a discharge into surface waters?	Y	
If the stormwater discharge enters a municipal separate storm sewer system to surface waters, has the permittee notified the owner of the system?	N/A	
Does the facility discharge process waters (wastewaters, SW commingled with any wastewaters, etc)?	Y	Process water covered under permit VA0092436
EFFLUENT DATA	(Y or N)	NOTES
List number of outfalls onsite:		Stormwater outfall 001 (VA0092436), outfalls 003 and 004 under this permit
Are all outfalls addressed in the registration statement and is each located to provide representative sampling of the discharge?	Y	
Condition of effluent (clear, turbid, floating solids, foam, odor, etc.):		No discharge at time of inspection
Condition of receiving stream (also note any upstream and downstream differences):		The remotely located UT of Fountains Creek was not viewed. No industrial impact was noted downstream of the outfalls or to Fountains Creek at the Brink Road Bridge.
Samples collected during inspection:		No discharge at time of inspection

The following issues noted at the time of inspection have been clarified with Mr. Rideout (further response is not required):

- Stormwater monitoring should be performed only when the interval from the preceding measurable storm event is at least 72 hours.
- Outfall evaluation for unauthorized discharges is required annually.
- After January 1, 2012, turbidity must be analyzed by a VELAP accredited laboratory.

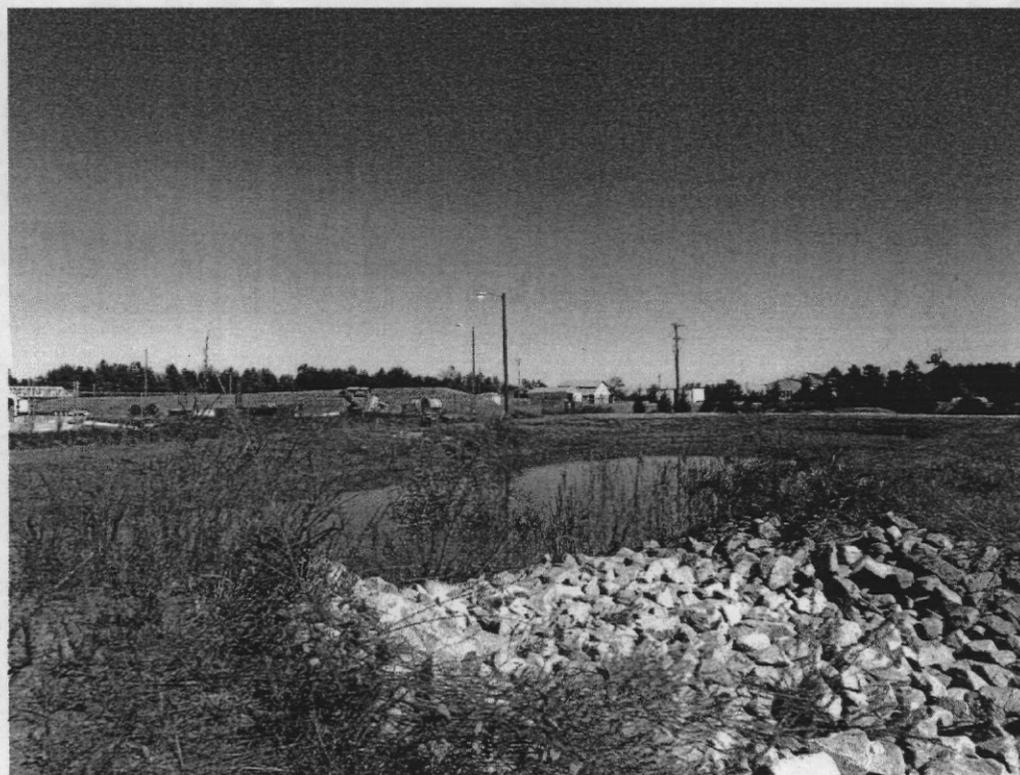
Request for Corrective Action:

1. Please discuss the schedule of activities planned to stabilize soil ahead of the stormwater pond for outfall 003.
2. Please add flow patterns and outfall locations to the SWPPP drainage map.

INSPECTION PHOTOS – VAR051881



A significant amount of exposed soil was noted ahead of the stormwater pond (far right-center of photo) that discharges to outfall 003



Stormwater outfall 004 is in foreground



DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road, Glen Allen, VA 23060-6296

804/527-5020

MEMORANDUM

To: File

From: Laura Galli, VPDES Permit Writer
Piedmont Regional Office

Subject: VPDES Permit No. VA0092436 – Iluka Brink Concentrator Plant

Date: January 22, 2015

On January 20, 2015 I visited the Iluka Brink Concentrator Plant as part of the permit reissuance process. Brian Wrenn and Zack Oremland from DEQ also were present, and we met with the plant's environmental supervisor Kevin Rideout. After an initial meeting to discuss general Health & Safety requirements, we proceeded with the tour of the plant. The plant appears in general good operating conditions. The water utilized for mineral separation and concentration derives from a reservoir located six miles from the plant; from an average of two to ten groundwater wells, and from precipitation. The mine is broken down into two deposits, one adjacent to the concentrator plant, and the other located approximately 2.5 miles away. Upon excavation, the mineral sand is immediately dumped into a mobile unit where the ore is slurried and pumped to the concentrator plant. At the concentrator plant, the facility uses process water to move and separate mineral sands from clay and gauge minerals in the ore body. Coarse waste materials such as pebbles, gravel and quartz sand (oversize material) is removed from the process water during the physical separation using screens and gravity separation. Most of the oversize material goes out to tails. The undersize fraction is pumped to hydrocyclones that remove the majority of clay from sands. The clay from the hydrocyclone overflow is pumped to a thickener where the addition of a flocculent aids the suspended clay to settle. The settled clays are pumped along with the previously removed coarse materials to tailing ponds for disposal and post-mining land reclamation. The water then flows from the thickener to the Clarifying Pond. The remaining solids settle out and the water flows from the Clarifying Pond through a weir to the Process Pond. The water is then recycled back into the plant in most circumstances. The underflow is directed to a sump and then pumped to a series of spiral gravity separators with separate higher specific gravity mineral sands from the lighter specific gravity quartz sands; the latter are then send to tailings. The mineral sand concentrate is then fed through a hydrosizer, which removes additional fine quartz sand grains from the concentrate. The concentrate is then pumped to a central stockpile and dewatered by cyclones before being loaded into trucks and transported to the Mineral Separation Plant.

Approximately 90% of the process water utilized in this process is recycled, with the only losses expected in the tailings, stockpile, and through evaporation. Therefore, the plant seldom discharges process water through Outfall 101 and 002. Stormwater runoff is controlled through stabilized channels and sediment basins. Stormwater comingles with the process wastewater in the sediment basins that have the potential to discharge through Outfalls 001 and 002.



Figure 1: Iluka Brink Mine



Figure 2: Spiral Gravity Separators



Figure 3: Location of Outfall 101 to Sediment Basin



Figure 4: Outfall 001 from Sediment Basin



Figure 5: Location of Outfall 002

Attachment D

Outfall 101 DMR Data, MSTRANTI Data Source and Spreadsheet

Iluka Brink Concentration

Permit No: VA0092436

Outfall Number	Code	Description	Quant Avg	Quanti Max	Conc Avg	Conc Min	Conc Max	Received Date	
101	001	FLOW	NULL	NULL	NULL	NULL	NULL	9-Jul-10	
			NULL	NULL	NULL	NULL	NULL	5-Oct-10	
			NULL	NULL	NULL	NULL	NULL	5-Jan-11	
			NULL	NULL	NULL	NULL	NULL	5-Apr-11	
			NULL	NULL	NULL	NULL	NULL	9-Jul-11	
			NULL	NULL	NULL	NULL	NULL	7-Oct-11	
			NULL	NULL	NULL	NULL	NULL	4-Jan-12	
			NULL	NULL	NULL	NULL	NULL	5-Apr-12	
			NULL	NULL	NULL	NULL	NULL	5-Jul-12	
			0.113	2.114	NULL	NULL	NULL	9-Oct-12	
			NULL	NULL	NULL	NULL	NULL	3-Jan-13	
			0.012	1.098	NULL	NULL	NULL	8-Apr-13	
			NULL	NULL	NULL	NULL	NULL	7-Jul-13	
			0.244	2.88	NULL	NULL	NULL	8-Oct-13	
			0.022	0.684	NULL	NULL	NULL	7-Jan-14	
	0.032	0.684	NULL	NULL	NULL	6-Apr-14			
	002	pH	NULL	NULL	NULL	NULL	NULL	NULL	9-Jul-10
			NULL	NULL	NULL	NULL	NULL	NULL	5-Oct-10
			NULL	NULL	NULL	NULL	NULL	NULL	5-Jan-11
			NULL	NULL	NULL	NULL	NULL	NULL	5-Apr-11
			NULL	NULL	NULL	NULL	NULL	NULL	9-Jul-11
			NULL	NULL	NULL	NULL	NULL	NULL	7-Oct-11
			NULL	NULL	NULL	NULL	NULL	NULL	4-Jan-12
			NULL	NULL	NULL	NULL	NULL	NULL	5-Apr-12
			NULL	NULL	NULL	NULL	NULL	NULL	5-Jul-12
NULL			NULL	NULL	6.04	8.36	NULL	9-Oct-12	
NULL	NULL	NULL	NULL	NULL	NULL	3-Jan-13			
NULL	NULL	NULL	6.52	7.15	NULL	8-Apr-13			
NULL	NULL	NULL	NULL	NULL	NULL	7-Jul-13			
NULL	NULL	NULL	6.04	6.94	NULL	8-Oct-13			
NULL	NULL	NULL	6.15	8.08	NULL	7-Jan-14			
NULL	NULL	NULL	6.09	7.8	NULL	6-Apr-14			
				pH	10th		7.024		
				pH	90th		8.248		

Outfall Number	Code	Description	Quant Avg	Quanti Max	Conc Avg	Conc Min	Conc Max	Received Date
101	004	TSS	NULL	NULL	NULL	NULL	NULL	9-Jul-10
			NULL	NULL	NULL	NULL	NULL	5-Oct-10
			NULL	NULL	NULL	NULL	NULL	5-Jan-11
			NULL	NULL	NULL	NULL	NULL	5-Apr-11
			NULL	NULL	NULL	NULL	NULL	9-Jul-11
			NULL	NULL	NULL	NULL	NULL	7-Oct-11
			NULL	NULL	NULL	NULL	NULL	4-Jan-12
			NULL	NULL	NULL	NULL	NULL	5-Apr-12
			NULL	NULL	NULL	NULL	NULL	5-Jul-12
			NULL	NULL	19.8	NULL	19.8	9-Oct-12
			NULL	NULL	NULL	NULL	NULL	3-Jan-13
			NULL	NULL	29.2	NULL	29.2	8-Apr-13
			NULL	NULL	NULL	NULL	NULL	7-Jul-13
			NULL	NULL	14.9	NULL	16.5	8-Oct-13
			NULL	NULL	16	NULL	16	7-Jan-14
			NULL	NULL	7.6	NULL	7.6	6-Apr-14

ATTACHMENT D

MSTRANTI DATA SOURCE – OUTFALL 101 and 002

		Outfall 101 and 002
Stream Information	Mean Hardness	Discharge to intermittent stream. Stream characteristics assumed to be the same as the effluent
	90% Temperature	
	90% Maximum pH	
	10% Maximum pH	
	Tier Designation	
Stream Flow	All Data	All equal to zero since discharge is to an intermittent stream.
Mixing Information	All Data	Discharge to intermittent stream. 100% mixing assumed.
Effluent Information	Mean Hardness	Based on EPA form 2C submitted with application.
	90% Temperature	No data available. PWJ – Conservative assumption.
	90% Maximum pH	Calculated from DMR data from 2010 to 2014.
	10% Maximum pH	
	Discharge Flow	Based on value reported on form 2C

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Iuka Brink Concentration Plant** - Outfall 101 and 002 Permit No.: **VA0092436**

Receiving Stream: **UT to Fountains Creek**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	1540 mg/L
90% Temperature (Annual) =	28 deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	8.25 SU
10% Maximum pH =	7.02 SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	MGD
30Q10 (Wet season) =	MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	%
- 30Q10 Mix =	%
Wet Season - 1Q10 Mix =	%
- 30Q10 Mix =	%

Effluent Information

Mean Hardness (as CaCO3) =	1540 mg/L
90% Temp (Annual) =	28 deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	8.25 SU
10% Maximum pH =	7.02 SU
Discharge Flow =	3.6 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02	
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00	
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00	
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	--	3.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	5.20E+00	6.94E-01	na	--	5.20E+00	6.94E-01	na	--	--	--	--	--	--	--	--	--	--	5.20E+00	6.94E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	5.20E+00	1.65E+00	na	--	5.20E+00	1.65E+00	na	--	--	--	--	--	--	--	--	--	--	5.20E+00	1.65E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04	
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02	
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--	
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02	
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03	
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Bis2-Chloroethyl Ether ^C	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00	
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04	
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01	
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03	
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03	
Cadmium	0	1.9E+01	3.4E+00	na	--	1.9E+01	3.4E+00	na	--	--	--	--	--	--	--	--	--	--	1.9E+01	3.4E+00	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01	
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03	

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	1.8E+03	2.3E+02	na	--	1.8E+03	2.3E+02	na	--	--	--	--	--	--	--	--	1.8E+03	2.3E+02	na	--	
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--	
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	na	--	
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	na	1.8E-02	
Copper	0	5.0E+01	2.9E+01	na	--	5.0E+01	2.9E+01	na	--	--	--	--	--	--	--	--	5.0E+01	2.9E+01	na	--	
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04	
DDD ^C	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	na	3.1E-03	
DDE ^C	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	na	2.2E-03	
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03	
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	1.0E-01	na	--	
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--	
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	na	1.8E-01	
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	na	1.3E+03	
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	na	9.6E+02	
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	na	1.9E+02	
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	na	2.8E-01	
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	na	1.7E+02	
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	na	3.7E+02	
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	na	7.1E+03	
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	na	1.0E+04	
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	na	2.9E+02	
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	na	--	
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	na	1.5E+02	
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	na	2.1E+02	
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04	
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	na	4.4E+04	
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	na	8.5E+02	
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	na	1.1E+06	
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	na	4.5E+03	
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	na	5.3E+03	
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	na	2.8E+02	
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	na	3.4E+01	
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	na	5.1E-08	
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	na	2.0E+00	
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01	
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01	
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--	
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	na	8.9E+01	
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02	
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	na	3.0E-01	

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00	
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	6.9E+02	7.9E+01	na	--	6.9E+02	7.9E+01	na	--	--	--	--	--	--	--	--	6.9E+02	7.9E+01	na	--	
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--	
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	5.9E+02	6.5E+01	na	4.6E+03	5.9E+02	6.5E+01	na	4.6E+03	--	--	--	--	--	--	--	5.9E+02	6.5E+01	na	4.6E+03	
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--	
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--	
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04	
Pentachlorophenol ^C	0	8.9E+00	6.8E+00	na	3.0E+01	8.9E+00	6.8E+00	na	3.0E+01	--	--	--	--	--	--	--	8.9E+00	6.8E+00	na	3.0E+01	
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	4.2E+03
Silver	0	3.7E+01	--	na	--	3.7E+01	--	na	--	--	--	--	--	--	--	--	--	3.7E+01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	3.8E+02	3.8E+02	na	2.6E+04	3.8E+02	3.8E+02	na	2.6E+04	--	--	--	--	--	--	--	--	3.8E+02	3.8E+02	na	2.6E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	2.0E+00
Chromium III	1.4E+02
Chromium VI	6.4E+00
Copper	1.8E+01
Iron	na
Lead	4.7E+01
Manganese	na
Mercury	4.6E-01
Nickel	3.9E+01
Selenium	3.0E+00
Silver	1.5E+01
Zinc	1.5E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

OUTFALL 101

Facility = Iluka Brink Concentrator Plant

Chemical = Chloride (ug/L)
Chronic averaging period = 4
WLAa = 860000
WLAc = 230000
Q.L. = 1000
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 4700
Variance = 7952399
C.V. = 0.6
97th percentile daily values = 11437.0
97th percentile 4 day average = 7819.81
97th percentile 30 day average= 5668.45
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

4700

Chemical = Chromium III (ug/L)
Chronic averaging period = 4
WLAa = 1800
WLAc = 230
Q.L. = 10
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 10
Variance = 36
C.V. = 0.6
97th percentile daily values = 24.3341
97th percentile 4 day average = 16.6379
97th percentile 30 day average= 12.0605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

10

Attachment E

**Effluent Guidelines, NSPS Requirements for Ore Mining and Dressing Point
Source**

Environmental Protection Agency

§ 440.54

mines obtaining titanium ores from lode deposits shall not exceed:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter	
Fe	2.0	1.0

(b) The concentration of pollutants discharged from mills beneficiating titanium ores by electrostatic methods, magnetic and physical methods, or flotation methods shall not exceed:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter	
Zn	1.0	0.5

(c) The concentration of pollutants discharged in mine drainage from mines engaged in the dredge mining of placer deposits of sands containing rutile, ilmenite, leucoxene, monazite, or zircon and the milling techniques employed in conjunction with the dredge mining activity (milling techniques employed include the use of wet gravity methods in conjunction with electrostatic or magnetic methods) shall not exceed:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter	
Fe	2.0	1.0

§ 440.54 New source performance standards (NSPS).

Except as provided in subpart L of this part any new source subject to this subpart must achieve the following NSPS representing the degree of effluent reduction attainable by the applications of the best available demonstrated technology (BADT):

(a) The concentration of pollutants discharged in mine drainage from mines obtaining titanium ores from lode deposits shall not exceed:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter	
Fe	2.0	1.0
pH	(¹)	(¹)
TSS	30.0	20.0

¹ Within the range of 6.0 to 9.1.

(b) The concentration of pollutants discharged from mills beneficiating titanium ores by electrostatic methods, magnetic and physical methods, or flotation methods shall not exceed:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter	
Zn	1.0	0.5
pH	(¹)	(¹)
TSS	30.0	20.0

¹ Within the range of 6.0 to 9.1.

(c) The concentration of pollutants discharged in mine drainage from mines engaged in the dredge mining of placer deposits of sands containing rutile, ilmenite, leucoxene, monazite, zircon and the milling techniques employed in conjunction with the dredge mining activity (milling techniques employed include the use of wet gravity methods in conjunction with electrostatic or magnetic methods) shall not exceed:

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days
	Milligrams per liter	
Fe	2.0	1.0
pH	(¹)	(¹)
TSS	30.0	20.0

¹ Within the range of 6.0 to 9.1.

Attachment F

Outfall 001 DMR Data, MSTRANTI Data Source and Spreadsheet

Iluka Brink Concentration Plant

Permit No: VA0092436

Outfall Number	Code	Parameter	Quant Avg	Quant Max	Conc Avg	Conc Min	Conc Max	Received Date
001	001	FLOW	0.0002	0.013	NULL	NULL	NULL	9-Jul-10
			0.166	0.238	NULL	NULL	NULL	5-Oct-10
			0.003	0.079	NULL	NULL	NULL	5-Jan-11
			0.0002	0.006	NULL	NULL	NULL	5-Apr-11
			NULL	NULL	NULL	NULL	NULL	9-Jul-11
			0.002	0.032	NULL	NULL	NULL	7-Oct-11
			0.004	0.005	NULL	NULL	NULL	4-Jan-12
			0.00001	0.001	NULL	NULL	NULL	5-Apr-12
			NULL	NULL	NULL	NULL	NULL	5-Jul-12
			0.123	2.114	NULL	NULL	NULL	9-Oct-12
			NULL	NULL	NULL	NULL	NULL	3-Jan-13
			0.012	1.108	NULL	NULL	NULL	8-Apr-13
			0.010	0.504	NULL	NULL	NULL	7-Jul-13
	0.218	2.59	NULL	NULL	NULL	8-Oct-13		
	0.022	0.684	NULL	NULL	NULL	7-Jan-14		
	0.032	0.684	NULL	NULL	NULL	6-Apr-14		
	002	pH	NULL	NULL	NULL	6.63	6.63	9-Jul-10
			NULL	NULL	NULL	7.00	7	5-Oct-10
			NULL	NULL	NULL	6.01	6.84	5-Jan-11
			NULL	NULL	NULL	7.11	7.42	5-Apr-11
NULL			NULL	NULL	NULL	NULL	9-Jul-11	
NULL			NULL	NULL	6.71	7.02	7-Oct-11	
NULL			NULL	NULL	6.77	6.78	4-Jan-12	
NULL			NULL	NULL	7.02	7.02	5-Apr-12	
NULL			NULL	NULL	NULL	NULL	5-Jul-12	
NULL			NULL	NULL	6.04	8.36	9-Oct-12	
NULL			NULL	NULL	NULL	NULL	3-Jan-13	
NULL			NULL	NULL	7.08	7.08	8-Apr-13	
NULL			NULL	NULL	6.74	6.74	7-Jul-13	
NULL	NULL	NULL	6.04	6.94	8-Oct-13			
NULL	NULL	NULL	6.49	8.16	7-Jan-14			
NULL	NULL	NULL	6.30	7.88	6-Apr-14			
				pH	10th	6.748		
				pH	90th	8.076		

Iluka Brink Concentration Plant

Permit No: VA0092436

Outfall Number	Code	Parameter	Quant Avg	Quant Max	Conc Avg	Conc Min	Conc Max	Received Date
	004	TSS	NULL	NULL	93.6	NULL	93.6	9-Jul-10
			NULL	NULL	12.6	NULL	12.6	5-Oct-10
			NULL	NULL	9.0	NULL	9.0	5-Jan-11
			NULL	NULL	27.2	NULL	27.2	5-Apr-11
			NULL	NULL	NULL	NULL	NULL	9-Jul-11
			NULL	NULL	32.9	NULL	41.3	7-Oct-11
			NULL	NULL	7.2	NULL	7.2	4-Jan-12
			NULL	NULL	17	NULL	17	5-Apr-12
			NULL	NULL	NULL	NULL	NULL	5-Jul-12
			NULL	NULL	20.2	NULL	20.2	9-Oct-12
			NULL	NULL	NULL	NULL	NULL	3-Jan-13
			NULL	NULL	16.6	NULL	16.6	8-Apr-13
			NULL	NULL	81.5	NULL	81.5	7-Jul-13
			NULL	NULL	16.0	NULL	16.0	8-Oct-13
			NULL	NULL	13.6	NULL	13.6	7-Jan-14
			NULL	NULL	6.0	NULL	6.0	6-Apr-14
	137	HARDNESS, TOTAL	NULL	NULL	36.4	NULL	36.4	4-Jan-12
			NULL	NULL	32.0	NULL	32	8-Jan-13
			NULL	NULL	10.71	NULL	12.9	7-Jan-14
						22.45		
	185	NICKEL, TOTAL RECOVERABLE	NULL	NULL	<10	NULL	<10	4-Jan-12
			NULL	NULL	<20	NULL	<20	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
	186	SILVER, TOTAL RECOVERABLE	NULL	NULL	<0.5	NULL	<0.5	4-Jan-12
			NULL	NULL	<5	NULL	<5	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
	196	ZINC, TOTAL RECOVERABLE	NULL	NULL	17.5	NULL	17.5	4-Jan-12
			NULL	NULL	<10	NULL	<10	8-Jan-13
			NULL	NULL	5.25	NULL	10.5	7-Jan-14

Iluka Brink Concentration Plant

Permit No: VA0092436

Outfall Number	Code	Parameter	Quant Avg	Quant Max	Conc Avg	Conc Min	Conc Max	Received Date
		CADMIUM, TOTAL						
	202	RECOVERABLE	NULL	NULL	<0.3	NULL	<0.3	4-Jan-12
			NULL	NULL	<10	NULL	<10	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
		COPPER, TOTAL						
	203	RECOVERABLE	NULL	NULL	<10	NULL	<10	4-Jan-12
			NULL	NULL	<20	NULL	<20	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
		ARSENIC, TOTAL						
	212	RECOVERABLE	NULL	NULL	<10	NULL	<10	4-Jan-12
			NULL	NULL	<50	NULL	<50	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
		LEAD, TOTAL						
	233	RECOVERABLE	NULL	NULL	<10	NULL	<10	4-Jan-12
			NULL	NULL	<5	NULL	<5	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
		MERCURY, TOTAL						
	235	RECOVERABLE	NULL	NULL	<0.2	NULL	<0.2	4-Jan-12
			NULL	NULL	<0.2	NULL	<0.2	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
		IRON, TOTAL						
	361	RECOVERABLE	NULL	NULL	1430	NULL	1430	4-Jan-12
			NULL	NULL	181	NULL	181	8-Jan-13
			NULL	NULL	1871.3	NULL	3710	7-Jan-14
		SELENIUM, TOTAL						
	408	RECOVERABLE	NULL	NULL	<3	NULL	<3	4-Jan-12
			NULL	NULL	<5	NULL	<5	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
		BERYLLIUM, TOTAL						
	796	RECOVERABLE	NULL	NULL	<10	NULL	<10	4-Jan-12
			NULL	NULL	<10	NULL	<10	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14

Iluka Brink Concentration Plant

Permit No: VA0092436

Outfall Number	Code	Parameter	Quant Avg	Quant Max	Conc Avg	Conc Min	Conc Max	Received Date
		ANTIMONY, TOTAL						
	797	RECOVERABLE	NULL	NULL	<100	NULL	<100	4-Jan-12
			NULL	NULL	<100	NULL	<100	8-Jan-13
			NULL	NULL	<QL	NULL	<QL	7-Jan-14
	798	TURBIDITY, NTU	NULL	NULL	39.4	NULL	39.4	4-Jan-12
			NULL	NULL	35	NULL	35	8-Jan-13
			NULL	NULL	12.1	NULL	12.1	7-Jan-14

ATTACHMENT F

MSTRANTI DATA SOURCE – OUTFALL 001

		Outfall 001
Stream Information	Mean Hardness	Discharge to intermittent stream. All field left blank. See Flow Frequency Memo (Attachment A).
	90% Temperature	
	90% Maximum pH	
	10% Maximum pH	
	Tier Designation	
Stream Flow	All Data	1Q10 set equal to 1MGD as is procedure for calculating 2 X WLAA in conjunction with discharge flow.
Mixing Information	All Data	Discharge to intermittent stream. 100% mixing assumed.
Effluent Information	Mean Hardness	From DMR Data.
	90% Temperature	Temperature and pH data are used in the calculation of ammonia waste load allocations. Since ammonia is not a parameter of concern in the list of stormwater benchmarks, then the data does not need to be entered in MSTRANTI.
	90% Maximum pH	
	10% Maximum pH	
Discharge Flow	Equal to 1 MGD in order to calculate 2xWLAA in conjunction with 1Q10.	

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Iuka Brink Concentration Plant** - Outfall 001

Permit No.: **VA0092436**

Receiving Stream: **UT to Fountains Creek**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	36.4 mg/L
90% Temperature (Annual) =	deg C
90% Temperature (Wet season) =	deg C
90% Maximum pH =	SU
10% Maximum pH =	SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	Y

Stream Flows

1Q10 (Annual) =	1 MGD
7Q10 (Annual) =	MGD
30Q10 (Annual) =	MGD
1Q10 (Wet season) =	MGD
30Q10 (Wet season) =	MGD
30Q5 =	MGD
Harmonic Mean =	MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	%
- 30Q10 Mix =	%
Wet Season - 1Q10 Mix =	%
- 30Q10 Mix =	%

Effluent Information

Mean Hardness (as CaCO3) =	36.4 mg/L
90% Temp (Annual) =	deg C
90% Temp (Wet season) =	deg C
90% Maximum pH =	SU
10% Maximum pH =	SU
Discharge Flow =	1 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02	
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	--	--	na	9.3E+00	
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	--	--	na	2.5E+00	
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	6.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	--	6.0E+00	--	na	5.0E-04
Ammonia-N (mg/l) (Yearly)	0	5.84E+01	7.09E+00	na	--	1.17E+02	7.09E+00	na	--	--	--	--	--	--	--	--	--	--	1.17E+02	7.09E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	5.84E+01	7.09E+00	na	--	5.84E+01	7.09E+00	na	--	--	--	--	--	--	--	--	--	--	5.84E+01	7.09E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04	
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	--	--	na	6.4E+02	
Arsenic	0	3.4E+02	1.5E+02	na	--	6.8E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	--	6.8E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--	
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	--	--	na	5.1E+02	
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	--	--	na	2.0E-03	
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01	
Bis2-Chloroethyl Ether ^C	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	--	--	na	5.3E+00	
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	--	--	na	6.5E+04	
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	--	--	na	2.2E+01	
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03	
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03	
Cadmium	0	1.3E+00	5.1E-01	na	--	2.5E+00	5.1E-01	na	--	--	--	--	--	--	--	--	--	--	2.5E+00	5.1E-01	na	--
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01	
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	4.8E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	--	4.8E+00	4.3E-03	na	8.1E-03
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	2.3E+05	na	--	--	--	--	--	--	--	--	--	--	1.7E+06	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	--	3.8E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03	

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations				
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02	
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04	
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03	
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02	
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	4.1E-02	na	--	--	--	--	--	--	--	--	--	--	1.7E-01	4.1E-02	na	--
Chromium III	0	2.5E+02	3.2E+01	na	--	5.0E+02	3.2E+01	na	--	--	--	--	--	--	--	--	--	--	5.0E+02	3.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	--	3.2E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	5.2E+00	3.8E+00	na	--	1.0E+01	3.8E+00	na	--	--	--	--	--	--	--	--	--	--	1.0E+01	3.8E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.4E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	--	4.4E+01	5.2E+00	na	1.6E+04
DDD ^C	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE ^C	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	2.2E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	--	2.2E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	3.4E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	--	3.4E-01	1.7E-01	na	--
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	4.8E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	--	4.8E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	--	4.4E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	--	4.4E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.4E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	--	4.4E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.7E-01	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	--	1.7E-01	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor ^C	0	5.2E-01	3.8E-03	na	7.9E-04	1.0E+00	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	1.0E+00	3.8E-03	na	7.9E-04
Heptachlor Epoxide ^C	0	5.2E-01	3.8E-03	na	3.9E-04	1.0E+00	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	1.0E+00	3.8E-03	na	3.9E-04
Hexachlorobenzene ^C	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene ^C	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane																					
Alpha-BHC ^C	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane																					
Beta-BHC ^C	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane																					
Gamma-BHC ^C (Lindane)	0	9.5E-01	na	na	1.8E+00	1.9E+00	--	na	1.8E+00	--	--	--	--	--	--	--	--	1.9E+00	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone ^C	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	3.3E+01	3.7E+00	na	--	6.6E+01	3.7E+00	na	--	--	--	--	--	--	--	--	--	6.6E+01	3.7E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	2.8E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	2.8E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride ^C	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	7.8E+01	8.6E+00	na	4.6E+03	1.6E+02	8.6E+00	na	4.6E+03	--	--	--	--	--	--	--	--	1.6E+02	8.6E+00	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine ^C	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine ^C	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine ^C	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	5.6E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	5.6E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	1.3E-02	na	--	--	--	--	--	--	--	--	--	1.3E-01	1.3E-02	na	--
PCB Total ^C	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol ^C	0	7.7E-03	5.9E-03	na	3.0E+01	1.5E-02	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	1.5E-02	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	4.0E+01	5.0E+00	na	4.2E+03
Silver	0	6.1E-01	--	na	--	1.2E+00	--	na	--	--	--	--	--	--	--	--	--	1.2E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	--	--	na	4.0E+01
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	--	--	na	4.7E-01
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	--	--	na	6.0E+03
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	1.5E+00	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	1.5E+00	2.0E-04	na	2.8E-03
Tributyltin	0	4.6E-01	7.2E-02	na	--	9.2E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	9.2E-01	7.2E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	--	--	na	7.0E+01
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	--	--	na	2.4E+01
Zinc	0	5.0E+01	5.0E+01	na	2.6E+04	1.0E+02	5.0E+01	na	2.6E+04	--	--	--	--	--	--	--	--	1.0E+02	5.0E+01	na	2.6E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.1E-01
Chromium III	1.9E+01
Chromium VI	6.6E+00
Copper	2.3E+00
Iron	na
Lead	2.2E+00
Manganese	na
Mercury	4.6E-01
Nickel	5.2E+00
Selenium	3.0E+00
Silver	4.9E-01
Zinc	3.0E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Attachment G
WET Tests Results

**Iluka Brink Mine Concentrator Plant
VA0092436**

**WET Testing/Monitoring
Results**

		Vertebrate Test Results			Invertebrate Test Results		
Place an X beside WET testing requirements under which the data were reported. Lista data in the appropriate test method columns.							
		Acute			Acute		
		48-Hour Static Renewal Tests:			48-Hour Static Renewal Tests:		
		<i>Pimephales promelas</i>	X		<i>Ceriodaphnia dubia</i>	X	
		<i>Oncorhynchus mykiss</i>					
		<i>Cyprinodon variegatus</i>					
		96-Hour Static Renewal Tests:			<i>Americamysis bahia</i>		
		<i>Pimephales promelas</i>					
		<i>Oncorhynchus mykiss</i>					
		<i>Cyprinodon variegatus</i>					
		48-Hour Static Acute (Pimephales promelas)			48-Hour Static Acute (Ceriodaphnia dubia)		
Laboratory Report or Sample Date	Acute Test Results			Acute Test Results			
	NOAEC (%)	LC50 (%)	Tua	NOAEC (%)	LC50 (%)	Tua	
9/11/2012	100	>100	1	100	>100	1	
2/11/2013	100	>100	1	100	>100	1	
9/20/2013	100	>100	1	100	>100	1	
12/20/2013	100	>100	1	100	>100	1	
1/16/2014	100	>100	1	100	>100	1	
6/27/2014	100	>100	1	100	>100	1	
9/24/2014	100	>100	1	100	>100	1	
12/19/2014	100	>100	1	100	>100	1	

Attachment H
Groundwater Data Analysis

VA0092436 Brink Concentrator Plant - Groundwater Monitoring Data Summary

Date	Conductivity - ($\mu\text{S}/\text{cm}$)				Total Dissolved Solids (TDS) (mg/L) *250 (mg/L)				Total Suspended Solids (TSS) (mg/L)			
	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5
4th Q 2012	166	99.6	125	141	77	104	92	86	16.7	183	14.8	6.3
1st Q 2013	106	102	128	125	65	108	76	96	81.5	56.3	48.1	4.5
2nd Q 2013	106	101	123	127	69	100	87	100	339	38	27.4	10.1
3rd Q 2013	85.7	88.1	103	109.5	104	130	90	126	51.7	50.8	14.1	5.9
4th Q 2013	\$	\$	\$	\$	43	68	59	44	10.1	42.2	13.5	6.4
1st Q 2014	78.56	79.28	87.36	116.8	53	70	31	67	112	190	6.1	17.4
2nd Q 2014	93.53	97.86	104.3	129.9	63	90	68	86	35.4	125	59.4	7.5
3rd Q 2014	88.34	88.37	107.3	121.8	68	70	61	65	4.7	1.9	<1.0	<1.0
4th Q 2014	96	98	111	124	57	80	59	41	25.6	<1.0	<1.0	5.2

Date	Temperature - field ($^{\circ}\text{C}$)				pH - Field - meter (S.U.) 5.5-8.5				Total Organic Carbon (mg/L) *10 (mg/L)			
	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5
4th Q 2012	20.2	18.7	19.1	18.5	4.45	5.71	5.1	4.88	<1	<1	<1	<1
1st Q 2013	18.4	18.2	16.3	17.6	6.36	6.25	6.13	5.63	<1.0	<1.0	<1.0	<1.0
2nd Q 2013	20.9	20.9	19.4	20.5	5.22	5.27	4.3	4.54	<1.0	<1.0	<1.0	<1.0
3rd Q 2013	19.1	20.4	21.5	23	5.63	5.87	4.44	4.9	<1.00	<1.00	<1.00	<1.00
4th Q 2013	17.7	16.9	19.8	18.9	5.11	5.48	4.56	4.45	ND	1	ND	2.6
1st Q 2014	16.7	14.51	16.12	17.9	4.95	5.5	4.41	4.65	<1.0	<1.0	2.5	<1.0
2nd Q 2014	23.25	19.3	20.14	21.5	4.87	5.48	4.46	4.64	<1.0	<1.0	<1.0	<1.0
3rd Q 2014	20.09	19.51	22.17	22.4	4.7	5.41	4.31	4.5	<1.0	<1.0	<1.0	<1.0
4th Q 2014	16.88	16.42	18.17	18.9	4.35	5.28	4.06	4.46	<1.0	<1.0	<1.0	<1.0

ND = Not Detected

\$ = the lab failed to run the sample for this, even though it was on the COC. When the problem was discovered, the sample was out of hold time.

= sample was not tested for Manganese

x = No Data reported

* = Groundwater Standard or Groundwater Criteria



VA0092436 Brink Concentrator Plant - Groundwater Monitoring Data Summary

Date	Chloride (mg/L)				Lead (mg/L)				Copper (mg/L)			
	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5
4th Q 2012	21.2	8.2	14.7	21.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1st Q 2013	8.3	7.4	15.5	12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2nd Q 2013	9	8.6	13.7	12.9	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
3rd Q 2013	11.2	8.9	16.6	14.5	0.017	<0.020	<0.020	0.009	<0.020	<0.020	<0.020	<0.020
4th Q 2013	8.8	8.5	13.5	16.3	ND	ND	ND	ND	ND	ND	ND	ND
1st Q 2014	8.8	7.7	15	15.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
2nd Q 2014	7.8	7.5	14.7	13.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3rd Q 2014	8.5	8.1	15.6	13.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4th Q 2014	8.3	8	16	14.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Date	Zinc (mg/L)				Iron (mg/L)				Manganese (mg/L)			
	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5
4th Q 2012	0.0188	0.0179	<0.01	<0.01	1.74	5.73	0.491	0.102	0.0382	0.2178	0.0183	0.0296
1st Q 2013	0.0402	<0.01	<0.01	<0.01	3.02	1.72	0.414	0.14	1.4	1.49	1.8	3.46
2nd Q 2013	0.0277	<0.0100	<0.0100	<0.0100	6.76	1.1	0.679	0.296	0.449	0.0618	0.0341	0.0181
3rd Q 2013	<0.020	<0.020	<0.020	<0.020	0.55	1.23	0.301	0.144	0.27	0.067	0.022	<0.020
4th Q 2013	0.0168	ND	ND	ND	0.07	0.76	0.169	0.141	#	#	#	#
1st Q 2014	0.0204	0.0327	<0.01	<0.01	1.9	5.57	0.101	0.679	#	#	#	#
2nd Q 2014	0.0103	<0.01	<0.01	<0.01	0.59	1.37	0.295	0.153	#	#	#	#
3rd Q 2014	0.0102	<0.01	<0.01	<0.01	0.0972	0.06	<0.01	0.024	#	#	#	#
4th Q 2014	<0.01	<0.01	<0.01	<0.01	0.48	0.0192	<0.01	0.032	#	#	#	#

ND = Not Detected

= sample was not tested for Manganese

* = Groundwater Standard or Groundwater Criteria

VA0092436 Brink Concentrator Plant - Groundwater Monitoring Data Summary

Date	Water Level - Distance from Surface				TPH, Diesel Range (mg/L)				TPH, Gasoline Range (mg/L)			
	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5	BMW-1A	BMW-3	BMW-4	BMW-5
4th Q 2012	x	x	x	x	x	<0.5	x	x	x	<0.5	x	x
1st Q 2013	9.5'	4.5'	6.5'	6'	x	<0.5	x	x	x	<0.5	x	x
2nd Q 2013	12'	6'	8'	8'	x	<0.5	x	x	x	<0.10	x	x
3rd Q 2013	12'	6'	6.2'	7'	x	<1	x	x	x	<1	x	x
4th Q 2013	16'	6.5'	7'	7'	x	ND	x	x	x	ND	x	x
1st Q 2014	12.37	4.52	7.71	6.65	x	<0.5	x	x	x	<0.1	x	x
2nd Q 2014	12.45	5.76	7.72	7.5	x	<0.5	x	x	x	<0.1	x	x
3rd Q 2014	13.73	5.4	7.65	7.09	x	<0.5	x	x	x	<0.1	x	x
4th Q 2014	16.13	6.42	9.48	7.88	x	<0.05	x	x	x	<0.01	x	x

ND = Not Detected

x = No Data reported

Groundwater Monitoring Data Analysis (v.3)

Facility Name:	Iluka Brink Concentrator Plant
Permit No.:	VA0092436
Monitoring Parameter:	conductivity
Applicable GW Standard (if none leave blank):	
Applicable GW Criteria (if none leave blank):	
Concentration Units (all data):	uS/cm

Well Designation ▶	Data Entry					
	BMW-1A	BMW-3	BMW-4	BMW-5	Compliance Well #4	Compliance Well #5
Sample or Report Date (ascending)	Background Well Data	Compliance Well #1	Compliance Well #2	Compliance Well #3		
1	1/10/2013	166	99.6	125	141	
2	4/10/2013	106	102	128	125	
3	7/10/2013	106	101	123	127	
4	10/10/2013	85.7	88.1	103	109.5	
5	4/10/2014	78.56	79.28	87.36	116.8	
6	7/10/2014	93.53	97.86	104.3	129.9	
7	10/10/2014	88.34	88.37	107.3	121.8	
8	1/10/2015	96	98	111	124	
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Results: Significance to Background **

		Distribution Tests		Non-normal Test	Normal Tests	
		Shapiro-Wilk Normality Test	Shapiro-Wilk Log Normality Test	Wilcoxon Rank Sum Test	T-test	T-test (lognormal)
BMW-	Background Well	Not normal	Not normal		N/A	
BMW-3	Compliance Well #1	Normal	Not normal	Not Significant	Not Significant	Not Significant
BMW-4	Compliance Well #2	Normal	Normal	Not Significant	Not Significant	Not Significant
BMW-5	Compliance Well #3	Normal	Normal	Significant	Significant	Significant
	Compliance Well #4					
	Compliance Well #5					

** Please note that the above cells will appear blank in cases where a test cannot be conducted due to lack of data, or if the test assumptions are invalid due to lack of data variation.

Results: Linear Regression Trend Analysis and

		Regression Line Slope	Pearson Correlation (R)	Interpretation	
				Linear Trend	Degree of Data Linearity
BMW-	Background Well	-0.066538699	-0.650116677	Slight Decrease	Moderately Strong
BMW-3	Compliance Well #1	-0.011385828	-0.376183166	Slight Decrease	Moderately Weak
BMW-4	Compliance Well #2	-0.03122693	-0.609860467	Slight Decrease	Moderately Strong
BMW-5	Compliance Well #3	-0.01175735	-0.339439312	Slight Decrease	Moderately Weak
	Compliance Well #4				
	Compliance Well #5				

Results: Groundwater Standards/Criteria Comparison

		Groundwater Standard		Groundwater Criteria		Total No. of Data Points
		No. Violations of GW Standard	% Violations of GW Standard	No. Violations of GW Criteria	% Violations of GW Criteria	
BMW-	Background Well					8
BMW-3	Compliance Well #1					8
BMW-4	Compliance Well #2					8
BMW-5	Compliance Well #3					8
	Compliance Well #4					
	Compliance Well #5					

Results: Basic Statistics (less-than values ignored)

		Maximum Value	Minimum Value	Average		
		BMW-	Background Well	166.000	78.560	102.516
BMW-3	Compliance Well #1	102.000	79.280	94.276		
BMW-4	Compliance Well #2	128.000	87.360	111.120		
BMW-5	Compliance Well #3	141.000	109.500	124.375		
	Compliance Well #4					
	Compliance Well #5					

Groundwater Monitoring Data Analysis (v.3)

Facility Name:	Iluka Brink Concentrator Plant
Permit No.:	VA0092436
Monitoring Parameter:	Total Dissolved Solids
Applicable GW Standard (if none leave blank):	250
Applicable GW Criteria (if none leave blank):	250
Concentration Units (all data):	mg/L

Well Designation ▶	Data Entry					
	BMW-1A	BMW-3	BMW-4	BMW-5	Compliance Well #4	Compliance Well #5
Sample or Report Date (ascending)	Background Well Data	Compliance Well #1	Compliance Well #2	Compliance Well #3	Compliance Well #4	Compliance Well #5
1	1/10/2013	77	104	92	86	
2	4/10/2013	65	108	76	96	
3	7/10/2013	69	100	87	100	
4	10/10/2013	104	130	90	126	
5	1/10/2014	43	68	59	44	
6	4/10/2014	53	70	31	67	
7	7/10/2014	63	90	68	86	
8	10/10/2014	68	70	61	65	
9	1/10/2015	57	80	59	41	
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Results: Significance to Background **

	Distribution Tests		Non-normal Test	Normal Tests	
	Shapiro-Wilk Normality Test	Shapiro-Wilk Log Normality Test	Wilcoxon Rank Sum Test	T-test	T-test (lognormal)
BMW- Background Well	Normal	Normal		N/A	
BMW-3 Compliance Well #1	Not normal	Not normal	Significant	Significant	Significant
BMW-4 Compliance Well #2	Not normal	Not normal	Not Significant	Not Significant	Not Significant
BMW-5 Compliance Well #3	Not normal	Not normal	Not Significant	Not Significant	Not Significant
Compliance Well #4					
Compliance Well #5					

** Please note that the above cells will appear blank in cases where a test cannot be conducted due to lack of data, or if the test assumptions are invalid due to lack of data variation.

Results: Linear Regression Trend Analysis and

	Regression Line Slope	Pearson Correlation (R)	Interpretation	
			Linear Trend	Degree of Data Linearity
BMW- Background Well	-0.024483017	-0.355967232	Slight Decrease	Moderately Weak
BMW-3 Compliance Well #1	-0.052987806	-0.624947146	Slight Decrease	Moderately Strong
BMW-4 Compliance Well #2	-0.050016941	-0.640096906	Slight Decrease	Moderately Strong
BMW-5 Compliance Well #3	-0.065875044	-0.598930028	Slight Decrease	Moderately Strong
Compliance Well #4				
Compliance Well #5				

Results: Groundwater Standards/Criteria Comparison

	Groundwater Standard		Groundwater Criteria		Total No. of Data Points
	No. Violations of GW Standard	% Violations of GW Standard	No. Violations of GW Criteria	% Violations of GW Criteria	
BMW- Background Well			0	0%	9
BMW-3 Compliance Well #1			0	0%	9
BMW-4 Compliance Well #2			0	0%	9
BMW-5 Compliance Well #3			0	0%	9
Compliance Well #4					
Compliance Well #5					

Results: Basic Statistics (less-than values ignored)

	Maximum Value	Minimum Value	Average		
BMW- Background Well	104.000	43.000	66.556		
BMW-3 Compliance Well #1	130.000	68.000	91.111		
BMW-4 Compliance Well #2	92.000	31.000	69.222		
BMW-5 Compliance Well #3	126.000	41.000	79.000		
Compliance Well #4					
Compliance Well #5					

Groundwater Monitoring Data Analysis (v.3)

Facility Name:	Iluka Brink Concentrator Plant
Permit No.:	VA0092436
Monitoring Parameter:	Total Suspended Solids
Applicable GW Standard (if none leave blank):	
Applicable GW Criteria (if none leave blank):	
Concentration Units (all data):	mg/L

Well Designation ▶	Data Entry					
	BMW-1A	BMW-3	BMW-4	BMW-5	Compliance Well #4	Compliance Well #5
Sample or Report Date (ascending)	Background Well Data	Compliance Well #1	Compliance Well #2	Compliance Well #3		
1	1/10/2013	16.7	183	14.8	6.3	
2	4/10/2013	81.5	56.3	48.1	4.5	
3	7/10/2013	339	38	27.4	10.1	
4	10/10/2013	51.7	50.8	14.1	5.9	
5	1/10/2014	10.1	42.2	13.5	6.4	
6	4/10/2014	112	190	6.1	17.4	
7	7/10/2014	35.4	125	59.4	7.5	
8	10/10/2014	4.7	1.9	<1.0	<1.0	
9	1/10/2015	25.6	<1.0	<1.0	5.2	
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Results: Significance to Background **

		Distribution Tests		Non-normal Test	Normal Tests	
		Shapiro-Wilk Normality Test	Shapiro-Wilk Log Normality Test	Wilcoxon Rank Sum Test	T-test	T-test (lognormal)
BMW-	Background Well	Not normal	Normal		N/A	
BMW-3	Compliance Well #1	Not normal	Not normal	Not Significant	Not Significant	Not Significant
BMW-4	Compliance Well #2	Not normal	Not normal	Not Significant	Not Significant	Not Significant
BMW-5	Compliance Well #3	Normal	Not normal	Not Significant	Not Significant	Not Significant
	Compliance Well #4					
	Compliance Well #5					

** Please note that the above cells will appear blank in cases where a test cannot be conducted due to lack of data, or if the test assumptions are invalid due to lack of data variation.

Results: Linear Regression Trend Analysis and

		Regression Line Slope	Pearson Correlation (R)	Interpretation	
				Linear Trend	Degree of Data Linearity
BMW-	Background Well	-0.136059143	-0.32385812	Slight Decrease	Moderately Weak
BMW-3	Compliance Well #1	-0.106010783	-0.367246179	Slight Decrease	Moderately Weak
BMW-4	Compliance Well #2	-0.026422605	-0.317910609	Slight Decrease	Moderately Weak
BMW-5	Compliance Well #3	-0.001861976	-0.100442258	Slight Decrease	Very Weak
	Compliance Well #4				
	Compliance Well #5				

Results: Groundwater Standards/Criteria Comparison

		Groundwater Standard		Groundwater Criteria		Total No. of Data Points
		No. Violations of GW Standard	% Violations of GW Standard	No. Violations of GW Criteria	% Violations of GW Criteria	
BMW-	Background Well					9
BMW-3	Compliance Well #1					9
BMW-4	Compliance Well #2					9
BMW-5	Compliance Well #3					9
	Compliance Well #4					
	Compliance Well #5					

Results: Basic Statistics (less-than values ignored)

		Maximum Value	Minimum Value	Average		
		BMW-	Background Well	339.000	4.700	75.189
BMW-3	Compliance Well #1	190.000	1.900	85.900		
BMW-4	Compliance Well #2	59.400	6.100	26.200		
BMW-5	Compliance Well #3	17.400	4.500	7.913		
	Compliance Well #4					
	Compliance Well #5					

Groundwater Data and Analysis Summary for pH

East Field

Facility Name:	Iluka Brink Concentrator Plant		
Permit Number:	VA0092436	Date:	1/15/2015
Parameter:	pH	Units:	S.U.
Upgradient Well Designation	BMW-1A		
Downgradient Well Designation	BMW-3		
Downgradient Well Designation	BMW-4		
Downgradient Well Designation	BMW-5		
Applicable Groundwater Standard (Lower):	5.5	S.U.	
Applicable Groundwater Standard (Upper):	8.5	S.U.	

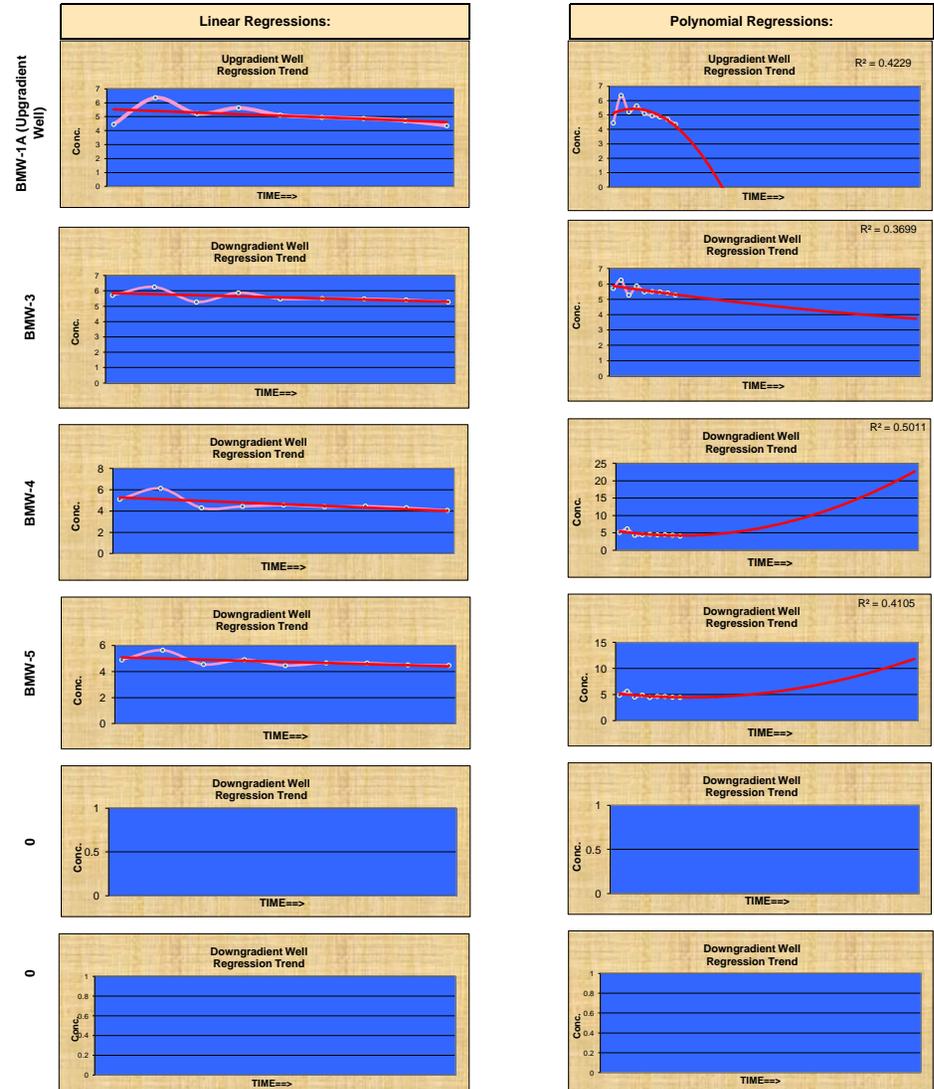
	Significant difference from Upgradient Well using parametric test?	Trend Analysis	
		R-Sq.	Slope
BMW-3	YES	0.3700	-0.0008
BMW-4	NO	0.4646	-0.0017
BMW-5	NO	0.3924	-0.0009

Groundwater Monitoring Report Date	BMW-1A (Upgradient Well)	BMW-3	BMW-4	BMW-5
1/10/2013	4.45	5.71	5.1	4.88
4/10/2013	6.36	6.25	6.13	5.63
7/10/2013	5.22	5.27	4.3	4.54
10/10/2013	5.63	5.87	4.44	4.9
1/10/2014	5.11	5.48	4.56	4.45
4/10/2014	4.95	5.5	4.41	4.65
7/10/2014	4.87	5.48	4.46	4.64
10/10/2014	4.7	5.41	4.31	4.5
1/10/2015	4.35	5.28	4.06	4.46

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St.Dev. ►	0.62	0.31	0.62	0.37
Mean ►	5.07	5.58	4.64	4.74
Is the Mean greater than 3X St.Dev. ? ►	YES	YES	YES	YES

Note: The comparison of the Mean to three times the Standard Deviation may help to determine if there is a statistically significant change in the trend of a data set. If any of the cells above contain "NO", this may be an indication of a sudden increase or decrease in concentration of the parameter. This should only be used as a flag and not the basis for any final decisions regarding the acceptability of the data.



Groundwater Monitoring Data Analysis (v.3)

Facility Name:	Iluka Brink Concentrator Plant
Permit No.:	VA0092436
Monitoring Parameter:	Chloride
Applicable GW Standard (if none leave blank):	25
Applicable GW Criteria (if none leave blank):	25
Concentration Units (all data):	mg/L

Well Designation ▶	Data Entry					
	BMW-1A	BMW-3	BMW-4	BMW-5	Compliance Well #4	Compliance Well #5
Sample or Report Date (ascending)	Background Well Data	Compliance Well #1	Compliance Well #2	Compliance Well #3	Compliance Well #4	Compliance Well #5
1	1/10/2013	21.2	8.2	14.7	21.2	
2	4/10/2013	8.3	7.4	15.5	12	
3	7/10/2013	9	8.6	13.7	12.9	
4	10/10/2013	11.2	8.9	16.6	14.5	
5	1/10/2014	8.8	8.5	13.5	16.3	
6	4/10/2014	8.8	7.7	15	15.2	
7	7/10/2014	7.8	7.5	14.7	13.2	
8	10/10/2014	8.5	8.1	15.6	13.1	
9	1/10/2015	8.3	8	16	14.1	
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Results: Significance to Background **

		Distribution Tests		Non-normal Test	Normal Tests	
		Shapiro-Wilk Normality Test	Shapiro-Wilk Log Normality Test	Wilcoxon Rank Sum Test	T-test	T-test (lognormal)
BMW-	Background Well	Not normal	Not normal		N/A	
BMW-3	Compliance Well #1	Normal	Normal	Not Significant	Not Significant	Not Significant
BMW-4	Compliance Well #2	Not normal	Not normal	Significant	Significant	Significant
BMW-5	Compliance Well #3	Not normal	Normal	Significant	Significant	Significant
	Compliance Well #4					
	Compliance Well #5					

** Please note that the above cells will appear blank in cases where a test cannot be conducted due to lack of data, or if the test assumptions are invalid due to lack of data variation.

Results: Linear Regression Trend Analysis and

		Regression Line Slope	Pearson Correlation (R)	Interpretation	
				Linear Trend	Degree of Data Linearity
BMW-	Background Well	-0.010167727	-0.600617277	Slight Decrease	Moderately Strong
BMW-3	Compliance Well #1	-0.000381568	-0.187037971	Slight Decrease	Very Weak
BMW-4	Compliance Well #2	0.001077942	0.264831375	Slight Increase	Moderately Weak
BMW-5	Compliance Well #3	-0.004326997	-0.392319489	Slight Decrease	Moderately Weak
	Compliance Well #4				
	Compliance Well #5				

Results: Groundwater Standards/Criteria Comparison

		Groundwater Standard		Groundwater Criteria		Total No. of Data Points
		No. Violations of GW Standard	% Violations of GW Standard	No. Violations of GW Criteria	% Violations of GW Criteria	
BMW-	Background Well			0	0%	9
BMW-3	Compliance Well #1			0	0%	9
BMW-4	Compliance Well #2			0	0%	9
BMW-5	Compliance Well #3			0	0%	9
	Compliance Well #4					
	Compliance Well #5					

Results: Basic Statistics (less-than values ignored)

		Maximum Value	Minimum Value	Average		
		BMW-	Background Well	21.200	7.800	10.211
BMW-3	Compliance Well #1	8.900	7.400	8.100		
BMW-4	Compliance Well #2	16.600	13.500	15.033		
BMW-5	Compliance Well #3	21.200	12.000	14.722		
	Compliance Well #4					
	Compliance Well #5					

Groundwater Monitoring Data Analysis (v.3)

Facility Name:	Iluka Brink Concentrator Plant
Permit No.:	VA0092436
Monitoring Parameter:	Iron
Applicable GW Standard (if none leave blank):	0.3
Applicable GW Criteria (if none leave blank):	0.3
Concentration Units (all data):	mg/L

Well Designation ▶	Data Entry					
	BMW-1A	BMW-3	BMW-4	BMW-5	Compliance Well #4	Compliance Well #5
Sample or Report Date (ascending)	Background Well Data	Compliance Well #1	Compliance Well #2	Compliance Well #3	Compliance Well #4	Compliance Well #5
1	1/10/2013	1.74	5.73	0.491	0.102	
2	4/10/2013	3.02	1.72	0.414	0.14	
3	7/10/2013	6.76	1.1	0.679	0.296	
4	10/10/2013	0.55	1.23	0.301	0.144	
5	1/10/2014	0.07	0.76	0.169	0.141	
6	4/10/2014	1.9	5.57	0.101	0.679	
7	7/10/2014	0.59	1.37	0.295	0.153	
8	10/10/2014	0.0972	0.06	<0.01	0.024	
9	1/10/2015	0.48	0.0192	<0.01	0.032	
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Results: Significance to Background **

		Distribution Tests		Non-normal Test	Normal Tests	
		Shapiro-Wilk Normality Test	Shapiro-Wilk Log Normality Test	Wilcoxon Rank Sum Test	T-test	T-test (lognormal)
BMW-	Background Well	Not normal	Normal		N/A	
BMW-3	Compliance Well #1	Not normal	Not normal	Not Significant	Not Significant	Not Significant
BMW-4	Compliance Well #2	Not normal	Not normal	Not Significant	Not Significant	Not Significant
BMW-5	Compliance Well #3	Not normal	Normal	Not Significant	Not Significant	Not Significant
	Compliance Well #4					
	Compliance Well #5					

** Please note that the above cells will appear blank in cases where a test cannot be conducted due to lack of data, or if the test assumptions are invalid due to lack of data variation.

Results: Linear Regression Trend Analysis and

		Regression Line Slope	Pearson Correlation (R)	Interpretation	
				Linear Trend	Degree of Data Linearity
BMW-	Background Well	-0.004539375	-0.530048512	Slight Decrease	Moderately Strong
BMW-3	Compliance Well #1	-0.004189237	-0.482089769	Slight Decrease	Moderately Weak
BMW-4	Compliance Well #2	-0.000756543	-0.827685658	Slight Decrease	Very Strong
BMW-5	Compliance Well #3	-7.01834E-05	-0.087846313	Slight Decrease	Very Weak
	Compliance Well #4				
	Compliance Well #5				

Results: Groundwater Standards/Criteria Comparison

		Groundwater Standard		Groundwater Criteria		Total No. of Data Points
		No. Violations of GW Standard	% Violations of GW Standard	No. Violations of GW Criteria	% Violations of GW Criteria	
BMW-	Background Well			7	77.8%	9
BMW-3	Compliance Well #1			7	77.8%	9
BMW-4	Compliance Well #2			4	44.4%	9
BMW-5	Compliance Well #3			1	11.1%	9
	Compliance Well #4					
	Compliance Well #5					

Results: Basic Statistics (less-than values ignored)

		Maximum Value	Minimum Value	Average		
		BMW-	Background Well	6.760	0.070	1.690
BMW-3	Compliance Well #1	5.730	0.019	1.951		
BMW-4	Compliance Well #2	0.679	0.101	0.350		
BMW-5	Compliance Well #3	0.679	0.024	0.190		
	Compliance Well #4					
	Compliance Well #5					

Groundwater Monitoring Data Analysis (v.3)

Facility Name:	Iluka Brink Concentrator Plant
Permit No.:	VA0092436
Monitoring Parameter:	Manganese
Applicable GW Standard (if none leave blank):	0.05
Concentration Units (all data):	mg/L

Well Designation ▶	Data Entry					
	BMW-1A	BMW-3	BMW-4	BMW-5	Compliance Well #4	Compliance Well #5
Sample or Report Date (ascending)	Background Well Data	Compliance Well #1	Compliance Well #2	Compliance Well #3	Compliance Well #4	Compliance Well #5
1	1/10/2013	0.0382	0.2178	0.0183	0.0296	
2	4/10/2013	1.4	1.49	1.8	3.46	
3	7/10/2013	0.449	0.0618	0.0341	0.0181	
4	10/10/2013	0.27	0.067	0.022	<0.020	
5	1/10/2014					
6	4/10/2014					
7	7/10/2014					
8	10/10/2014					
9	1/10/2015					
10						
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Results: Significance to Background **

	Distribution Tests		Non-normal Test	Normal Tests	
	Shapiro-Wilk Normality Test	Shapiro-Wilk Log Normality Test	Wilcoxon Rank Sum Test	T-test	T-test (lognormal)
BMW- Background Well	Normal	Normal		N/A	
BMW-3 Compliance Well #1	Not normal	Normal	Not Significant	Not Significant	Not Significant
BMW-4 Compliance Well #2	Not normal	Not normal	Not Significant	Not Significant	Not Significant
BMW-5 Compliance Well #3	Not normal	Not normal	Not Significant	Not Significant	Not Significant
Compliance Well #4					
Compliance Well #5					

** Please note that the above cells will appear blank in cases where a test cannot be conducted due to lack of data, or if the test assumptions are invalid due to lack of data variation.

Results: Linear Regression Trend Analysis and

	Regression Line Slope	Pearson Correlation (R)	Interpretation	
			Linear Trend	Degree of Data Linearity
BMW- Background Well	-0.000299478	-0.05884123	Slight Decrease	Very Weak
BMW-3 Compliance Well #1	-0.002081843	-0.353933526	Slight Decrease	Moderately Weak
BMW-4 Compliance Well #2	-0.001949966	-0.258088261	Slight Decrease	Moderately Weak
BMW-5 Compliance Well #3	-0.003888352	-0.265525727	Slight Decrease	Moderately Weak
Compliance Well #4				
Compliance Well #5				

Results: Groundwater Standards/Criteria Comparison

	Groundwater Standard		Groundwater Criteria		Total No. of Data Points
	No. Violations of GW Standard	% Violations of GW Standard	No. Violations of GW Criteria	% Violations of GW Criteria	
BMW- Background Well			3	75%	4
BMW-3 Compliance Well #1			4	100%	4
BMW-4 Compliance Well #2			1	25%	4
BMW-5 Compliance Well #3			1	25%	4
Compliance Well #4					
Compliance Well #5					

Results: Basic Statistics (less-than values ignored)

	Maximum Value	Minimum Value	Average		
BMW- Background Well	1.400	0.038	0.539		
BMW-3 Compliance Well #1	1.490	0.062	0.459		
BMW-4 Compliance Well #2	1.800	0.018	0.469		
BMW-5 Compliance Well #3	3.460	0.018	1.169		
Compliance Well #4					
Compliance Well #5					

Attachment I

NPDES Industrial Permit Rating Worksheet

NPDES PERMIT RATING WORK SHEET

NPDES NO. VA0092436

- Regular Addition
- Discretionary Addition
- Score change, but no status change
- Deletion

Facility Name: Iluka Brink Mine Concentrator Plant

City: Greenville County

Receiving Water: UT to Fountains Creek

Reach Number: NA

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
 2. A nuclear power plant
 3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate
- YES; score is 600 (stop here) NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

- YES; score is 700 (stop here)
 NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary SIC Code: 1099 Other SIC Codes:
 Industrial Subcategory Code: 0 (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	15	<input type="checkbox"/> 7.	7	35
<input type="checkbox"/> 1.	1	5	<input checked="" type="checkbox"/> 4.	4	20	<input type="checkbox"/> 8.	8	40
<input type="checkbox"/> 2.	2	10	<input type="checkbox"/> 5.	5	25	<input type="checkbox"/> 9.	9	45
			<input type="checkbox"/> 6.	6	30	<input type="checkbox"/> 10.	10	50

Code Number Checked: 4

Total Points Factor 1: 20

FACTOR 2: Flow/Stream Flow Volume *(Complete either Section A or Section B; check only one)*

Section A Wastewater Flow Only Considered

Wastewater Type (See Instructions)	Code	Points
Type I: Flow < 5 MGD	<input type="checkbox"/> 11	0
Flow 5 to 10 MGD	<input type="checkbox"/> 12	10
Flow > 10 to 50 MGD	<input type="checkbox"/> 13	20
Flow > 50 MGD	<input type="checkbox"/> 14	30
Type II: Flow < 1 MGD	<input type="checkbox"/> 21	10
Flow 1 to 5 MGD	<input checked="" type="checkbox"/> 22	20
Flow > 5 to 10 MGD	<input type="checkbox"/> 23	30
Flow > 10 MGD	<input type="checkbox"/> 24	50
Type III: Flow < 1 MGD	<input type="checkbox"/> 31	0
Flow 1 to 5 MGD	<input type="checkbox"/> 32	10
Flow > 5 to 10 MGD	<input type="checkbox"/> 33	20
Flow > 10 MGD	<input type="checkbox"/> 34	30

Section B Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Percent of instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	<input type="checkbox"/>	41	0
	10 % to < 50 %	<input type="checkbox"/>	42	10
	> 50 %	<input type="checkbox"/>	43	20
Type II:	< 10 %	<input type="checkbox"/>	51	0
	10 % to < 50 %	<input type="checkbox"/>	52	20
	> 50 %	<input type="checkbox"/>	53	30

Code Checked from Section A or B: 22

Total Points Factor 2: 20

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

NPDES NO: VA0092436

A. Oxygen Demanding Pollutant: (check one) BOD COD Other: _____

Permit Limits: (check one)	<input type="checkbox"/>	< 100 lbs/day	<i>Code</i>	<i>Points</i>
	<input type="checkbox"/>	100 to 1000 lbs/day	1	0
	<input type="checkbox"/>	> 1000 to 3000 lbs/day	2	5
	<input type="checkbox"/>	> 3000 lbs/day	3	15
	<input type="checkbox"/>	> 3000 lbs/day	4	20

Code Checked: NA

Points Scored: 0

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	<input type="checkbox"/>	< 100 lbs/day	<i>Code</i>	<i>Points</i>
	<input checked="" type="checkbox"/>	100 to 1000 lbs/day	1	0
	<input type="checkbox"/>	> 1000 to 5000 lbs/day	2	5
	<input type="checkbox"/>	> 5000 lbs/day	3	15
	<input type="checkbox"/>	> 5000 lbs/day	4	20

Code Checked: 2

Points Scored: 5

C. Nitrogen Pollutant: (check one) Ammonia Other: _____

Permit Limits: (check one)	<input type="checkbox"/>	<i>Nitrogen Equivalent</i>	<i>Code</i>	<i>Points</i>
	<input type="checkbox"/>	< 300 lbs/day	1	0
	<input type="checkbox"/>	300 to 1000 lbs/day	2	5
	<input type="checkbox"/>	> 1000 to 3000 lbs/day	3	15
	<input type="checkbox"/>	> 3000 lbs/day	4	20

Code Checked: NA

Points Scored: 2

Total Points Factor 3: 5

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

YES (If yes, check toxicity potential number below)

NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	0	<input type="checkbox"/> 7.	7	15
<input checked="" type="checkbox"/> 1.	1	0	<input type="checkbox"/> 4.	4	0	<input type="checkbox"/> 8.	8	20
<input type="checkbox"/> 2.	2	0	<input type="checkbox"/> 5.	5	5	<input type="checkbox"/> 9.	9	25
			<input type="checkbox"/> 6.	6	10	<input type="checkbox"/> 10.	10	30

Code Number Checked: 1

Total Points Factor 4: 0

FACTOR 5: Water Quality Factors

NPDES NO. VA0092436

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:*

<input checked="" type="checkbox"/>	Yes	Code	Points
		1	10
<input type="checkbox"/>	No	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

<input checked="" type="checkbox"/>	Yes	Code	Points
		1	0
<input type="checkbox"/>	No	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

<input type="checkbox"/>	Yes	Code	Points
		1	10
<input checked="" type="checkbox"/>	No	2	0

Code Number Checked: A 1 B 1 C 2

Points Factor 5: A 10 + B 0 + C 0 = 10 TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. *Base Score: Enter flow code here (from Factor 2):* _____

Enter the multiplication factor that corresponds to the flow code: 0.3

Check appropriate facility HPRI Code (from PCS):

	HPRI#	Code	HPRI Score	Flow Code	Multiplication Factor
<input type="checkbox"/>	1	1	20	11, 31, or 41	0.00
<input type="checkbox"/>	2	2	0	12, 32, or 42	0.05
<input type="checkbox"/>	3	3	30	13, 33, or 43	0.10
<input checked="" type="checkbox"/>	4	4	0	14 or 34	0.15
<input type="checkbox"/>	5	5	20	21 or 51	0.10
				22 or 52	0.30
				23 or 53	0.60
				24	1.00

HPRI code checked: 4

Base Score: (HPRI Score) 0 X (Multiplication Factor) 0.30 = 0 (TOTAL POINTS)

B. *Additional Points* *NEP Program*

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
<input type="checkbox"/> Yes	1	10
<input checked="" type="checkbox"/> No	2	0

C. *Additional Points* *Great Lakes Area of Concern*

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

	Code	Points
<input type="checkbox"/> Yes	1	10
<input checked="" type="checkbox"/> No	2	0

Code Number Checked:

A 0 B 0 C 0

Points Factor 6: A 0 + B 0 + C 0 = 0 TOTAL

SCORE SUMMARY

NPDES NO.

Factor	Description	Total Points
1	Toxic Pollutant Potential	<u>20</u>
2	Flows/Streamflow Volume	<u>20</u>
3	Conventional Pollutants	<u>5</u>
4	Public Health Impacts	<u>0</u>
5	Water Quality Factors	<u>10</u>
6	Proximity to Near Coastal Waters	<u>0</u>
TOTAL (Factors 1 through 6)		<u>55</u>

S1. Is the total score equal to or greater than 80? Yes (Facility is a major) No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

No

Yes (Add 500 points to the above score and provide reason below:

Reason:

NEW SCORE: 55

OLD SCORE: 55

Laura Galli
Permit Reviewer's Name

(804) 527-5095
Phone Number

December 10, 2014
Date

Attachment J
VDH Coordination Response



RECEIVED PRO
DEC 12 2014

COMMONWEALTH of VIRGINIA

Marissa J. Levine, MD, MPH, FAAFP
State Health Commissioner

DEPARTMENT OF HEALTH

OFFICE OF DRINKING WATER

John J. Aulbach II, PE
Director, Office of Drinking Water

Madison Building
109 Governor Street, 6th Floor
Richmond, VA 23219
Phone: 804-864-7500
Fax: 804-864-7521

DATE: DEC 09 2014

FROM: DBH Daniel B. Horne, PE, Engineering Field Director

TO: Laura Galli, VPDES Permit Writer
DEQ, Piedmont Regional Office
4949-A Cox Road
Glenn Allen, VA 23060

CITY/COUNTY: Greensville County

APPLICANT: Iluka Resources Inc.– Brink Mine Concentrator Plant

PERMIT TYPE: VPDES Permit No. VA0092436

APPLICATION TYPE: Re-Issuance (Existing)

PROJECT: Brink Mine Concentrator Plant

SUBJECT: Review response for DEQ's permit application #0092436

Our office has reviewed the application for reissuance of the existing VPDES Permit VA0092436, the addition of Outfall 002 and the characteristics of the water associated with the Brink Mine Concentrator Plant.

No public raw water intakes in Virginia were found downstream from the discharge point/area.

There are no apparent impacts to waterworks sources as a result of this permit.

Please forward a copy of the final permit for our files.

cc: VDH, ODW – Central Office
VDH, Greensville-Emporia Health Dept.
Mr. Kevin Rideout, Iluka Resources Inc.

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